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Appl. No. 10/804,758
Supplemental Amdt. dated June 15, 2007
Supplementing Amdt. dated April 26, 2007
Reply to Office action of January 26, 2007

REMARKS

Applicants sincerely appreciate the courtesy extended by Examiner Zanelli at the interview conducted on May 21, 2007. Pursuant to the discussion at the interview, the previous amendment filed on April 26, 2007 is hereby supplemented. Claims 1 and 10, the only pending independent claims, have been amended to more particularly point out and distinctly claim what applicants regard as their invention.

More specifically, claim 1 has been reformatted to clarify the structure (i.e. the control system and microprocessor controller) performing the "wherein" clause functions. Moreover, claim 1 has been amended to include the additional features of yaw and roll gyroscopes, which are configured to derived rates of change of the heading and roll angles respectively. The gyroscope-derived heading and roll angle rates of change are integrated with the GNSS-derived heading and roll angles and the crosstrack error is corrected based on the offset to ground and the roll angle.

Claim 1 was initially rejected under 35 U.S.C. § 103(a) based on Hrovat et al. U.S. 6,671,587, which shows multiple antennas for determining vehicle heading and computing vehicle position and dynamics, such as roll, pitch, yaw and velocity. Output signals are directed to the vehicle dynamics control devices, such as the suspension and brakes. However, there is no suggestion or motivation to adapt the Hrovat system to compensate for cross-track error induced by roll angle, including determining the roll angle and accordingly adjusting the projected vehicle center to ground. In fact, Hrovat is concerned with locating the center of gravity of the vehicle, e.g., a passenger automobile in the example shown. For purposes of providing navigation for this type of vehicle, the roll angle can essentially be ignored. Therefore, this reference actually teaches away from the invention of amended claim 1.

Claims 1 and 10 were also initially rejected under 35 U.S.C. § 103(a) based on Parkinson et al., U.S. 6,052,647. Although Parkinson et al. show a steering control 35, there is no disclosure of correcting for cross-track error, nor any disclosure of calculating cross-track error based on a roll angle, which in turn is based on a fixed offset distance from at least one antenna to a ground surface. Still further, Parkinson is distinguishable because it does not disclose yaw and roll gyroscopes deriving rates of change of the heading and roll angles respectively, which information is integrated with the GNSS-derived heading and roll angles.

Claim 10 was also initially rejected under 35 U.S.C. § 102 based on Hrovat et al. As discussed above, this reference lacks the claimed feature of using the roll angle and the known height, or fixed offset, to at least one of the antennas. Pinto (2002/0165669) combines GPS and an inertial system for attitude measurement utilizing two closely-spaced antennas, but does not disclose providing navigation, vehicle steering or crosstrack error correction.

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Therefore, based on foregoing, reconsideration and withdrawal of the rejections of independent claims 1 and 10 are respectfully requested.

Also pursuant to the discussion in the interview, claim 4 has been amended to clarify its relation to claim 1, which has also been amended to clarify the functions performed by the microprocessor of the control system and to include yaw and roll gyroscopes for determining rates of change. Claim 12 has been cancelled.

Based on the foregoing, this application is in condition for allowance and notice to this effect is earnestly solicited. The examiner is invited to contact the undersigned by telephone if prosecution of this application can be expedited thereby.

The Commissioner is authorized to charge any excess fees to Deposit Account No. 503-424.

Substance of the May 21, 2007 Interview

1. No exhibits were shown or demonstrations conducted.
2. Claims 1, 4, 10 and 12 were discussed.
3. Hrovat et al. (6,671,587; Parkinson et al. (6,052,647) and Pinto (2002/0165669) were discussed.
4. The principle proposed amendments of a substantive nature related to amending the claims are reflected on the attachment to the Interview Summary.
5. The general thrust of the principal arguments was that clarification of the structure performing the "wherein" clause functions, with the additional features relating to integrating heading and roll angle rates of change, and other features of the combinations of claims 1 and 10, would overcome the cited art.
6. No other pertinent matters were discussed.
7. The general results or outcome of the interview are reflected on the Interview Summary.

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I hereby certify that this paper is being filed by
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U.S. Patent and Trademark Office.

Date of fax transmission: June 15, 2007

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Respectfully Submitted,

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